

REMARKS

This is a full and timely response to the non-final Office Action mailed August 9, 2007, in which each of Applicants' Claims 1 and 3-21 was rejected and Applicants' Claim 12 was objected to. By way of this Response, Applicants' Claims 1, 13, and 17 have been amended, and Applicants' Claim 12 has been cancelled. Reconsideration of Applicants' pending Claims 1, 3-11, and 13-21 is respectfully requested in view of the following remarks.

I. Telephone Conversation with Examiner occurring on November 1, 2007

Applicants wish to thank Examiner Smith for engaging in a telephone conversation on November 1, 2007, regarding the patentability of Applicants' claims in view of the rejections set-forth in the non-final Office Action mailed August 9, 2007. At the conclusion of this discussion, it was agreed that Applicants' independent Claims 1, 13, and 17 would potentially distinguish over US Pub. 2003/0040188 (the Hsu reference) if amended to recite that each feature in the plurality of features includes a feature cavity and that at least a majority of each feature cavity is filled by the layer comprising copper during the electrodeposition (plating) step. Applicants have amended independent Claims 1, 13, and 17 accordingly.

II. Claim Objections

On page 2, the Office Action objects to Applicants' dependent Claim 12 as being a duplicate of Claim 4.

Applicants' dependent Claim 12 has been cancelled without prejudice or disclaimer of the subject matter contained therein.

III. Claim Rejections - 35 U.S.C. § 102

On page 2, the Office Action rejects Applicants' Claims 1, 3, 6-11, 13, 14, and 16-20 under 35 U.S.C. § 102(c) as anticipated by US Pub. 2003/0040188 (the Hsu reference). With respect to Applicants' independent Claims 1, 13, and 17, in particular, the Office Action states that the Hsu reference discloses a method comprising each of the claimed steps, including the step of electrodepositing a layer comprising copper having a substantially

planar upper surface overlying the barrier layer and filling the features in the insulating layer. In support of this statement, the Office Action cites Hsu Paragraph 0014, Claims 1 and 5, and FIG. 8C.

Applicants' independent Claims 1, 13, and 17 have each been amended to further distinguish over the Hsu reference and the other references of record. As amended, Applicants' independent Claims 1, 13, and 17 each specify that: (1) the insulating layer comprises a field region and a plurality of features each including a feature cavity, and (2) the method includes the step of electrodepositing a layer comprising copper having a substantially planar upper surface overlying the barrier layer and filling at least a majority of each feature cavity. Per the above-referenced conversation with Examiner occurring on November 1, 2007, it is believed that the Hsu reference does not teach the step of electrodepositing such a layer. For example, the Hsu reference does not teach the step of electrodepositing a layer comprising copper that fills *at least a majority* of each feature cavity; as can be seen in Hsu FIGs. 8B and 8C, substantially less than a majority of the feature cavity 840 is filled during the second deposition step.

In view of the above, it is respectfully submitted that the Hsu reference does not teach each element recited in Applicants' amended independent Claims 1, 13, and 17 as required to establish a *prima facie* case of anticipation under 35 U.S.C. § 102(e). Considering this, and considering that no additional rejections have been asserted against Applicants' amended independent Claims 1, 13, and 17, it is respectfully submitted that Claims 1, 13, and 17 are allowable.

Applicants' dependent Claims 3, 6-11, 14, 16, and 18-20 are believed allowable in view of their dependency from Applicants' amended independent Claims 1, 13, and 17.

IV. Claim Rejections - 35 U.S.C. § 103

On page 4, the Office Action rejects Applicants' Claims 4, 5, 12, and 15 under 35 U.S.C. § 103(a) as being unpatentable over the Hsu reference taken in view of US Pat. No. 6,776,696 (the Mahulikar reference).

As an initial matter Applicants note that the Mahulikar reference does not teach the step of electrodeposition (plating) recited in Applicants' independent Claims 1, 13, and 17

and thus cannot cure the deficiencies of the Hsu reference pointed out above. In addition, Applicants note that it would not have been obvious to modify the method of Hsu reference to form a significantly larger recess 850 in feature 840 (Hsu FIG. 8B), and thus fill a larger volume of feature 840 during the second deposition step (Hsu FIG. 8C), because it is an explicitly stated goal of the Hsu reference to minimize dishing during the initial polishing step. See the Specification of the Hsu reference, including Paragraphs 0120 and 0139.

It is thus respectfully submitted that Applicants' Claims 4, 5, and 15 are allowable in view of their dependency from Applicants' amended independent Claims 1 and 13.

As previously stated, Applicants' Claim 12 has been cancelled without prejudice or disclaimer of the subject matter contained therein.

V. Conclusion

In view of Applicants' forgoing amendments and remarks, it is respectfully submitted that the rejections set-forth in the non-final Office Action mailed August 9, 2007, have been overcome. Accordingly, Applicants respectfully submit that the Application is now in condition for allowance, and such allowance is earnestly requested. Should the Examiner have any questions or wish to further discuss this application, Applicants request that the Examiner contact the Applicants' attorneys at (480) 385-5060. If for some reason Applicants have not requested a sufficient extension and/or has not paid a sufficient fee for this Response and/or for the extension necessary to prevent abandonment on this application, please consider this as a request for an extension for the required time period and/or authorization to charge Deposit Account No. 50-2091 for any fee which may be due.

Respectfully submitted,
INGRASSIA, FISHER & LORENZ

Dated: November 2, 2007

By /JUSTIN J. LEACH, REG. NO. 59,220/
Justin J. Leach
Reg. No. 59,220
Telephone (480) 385-5060
Customer No. 29,906